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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET
08/183,800	01/21/94	YAMAZAKI	S 0756958

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ESM1/0408

SAADAT, EXAMINER

ART UNIT	PAPER NUMBER
2508	15

DATE MAILED: 04/08/94

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 5-14, 23-28 are pending in the application.
Of the above, claims 5-14 are withdrawn from consideration.
2. ☒ Claims 1-4, 15-22 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 23-28 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☒ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☒ been filed in parent application, serial no. 07/852,517; filed on 3-17-92
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Art Unit: 2508

1. The preliminary amendment filed January 21, 1994, as paper No. 14, has been entered and considered.

2. Claims 23-28 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the wavenumber corresponding to the Raman Peak in claim 23, the ratio of a FWHM in claim 25, and the peak intensity ratio I_a/I_c in claim 27 depend on the kind of impurity present in the amorphous silicon, i.e. oxygen nitrogen, or carbon, or is an indicator independent of the kind of impurity element. The claim language limits the impurity element to one of the oxygen nitrogen or carbon atoms where the specification refers to all of the elements existing in the silicon.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 23-28 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Yamazaki (U.S. Patent No. 4,727,044).

The Yamazaki reference disclosed a thin film transistor with a

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non-single-crystal silicon channel layer formed over an insulating surface of the substrate 1 where a gate electrode via a gate insulating layer contacts the channel layer. The channel layer is later crystallized leaving oxygen, nitrogen, or carbon concentration at levels not exceeding 5×10^{18} atom/cm³ so that the electron mobility in the channel layer is not decreased. See Yamazaki at column 6, lines 8-68 and at column 8, lines 6-23. With regard to the claim limitations of Raman Peak measurements in claims 23-28 no direct reference in the specification can be found to indicate a relation to the claimed structure other than a post construction activity that is for measurements purposes. The Raman Peak numbers are all obtained by changing the amount of oxygen, nitrogen, or carbon which as commonly known in the art result in change of electron mobility. The specification refers to similar properties in the paragraph linking pages 8 and 9 by stating that electron mobility is higher for films containing less amorphous components which is a known and inherent property of the recrystallized silicon. Therefore, the prior art structure also meets the Raman Peak measurement limitations since all the structural limitations and properties related to and resulting in such measurements are anticipated by the cited reference and the particular measurements of the prior art device would result in similar Raman Peak numbers for the specified impurity concentrations.

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5. Claims 5-14 are withdrawn from consideration as being drawn to a non-elected invention, the election having been made without traverse in the response, paper No. 6.

Applicants are requested to cancel the non-elected claims as part of the response to this office action. Note that cancellation of the non-elected claims would not preclude the later filing of a divisional application on the non-elected invention (35 USC 120, 121: 37 CFR 1.60).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahshid Saadat whose telephone number is (703) 308-4915.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Mahshid Saadat

Mahshid D. Saadat
Examiner
Group Art Unit 2508

MDS
April 7, 1994